worthia is thought to strengthen the evidence of the approximation of Araucarineae and Abietineae in the early Mesozoic, and of the more primitive character of the latter.

The same investigator[24] has also published a new species of *Prepinus* from the Cretaceous of Martha's Vineyard, which differs from the type species of Staten Island in that the wood of the short shoots has numerous resin canals in two or more rows, and the pith is without sclerotic nests. The conclusion is reached that "ligneous resin canals" are features of the oldest Abietineae, as shown now by the structure of the archaic genus *Prepinus* and also by that of the oldest species of *Pityoxylon*.—J. M. C.

Chlorophyll and photosynthesis.—IRVING,[25] working in BLACKMAN'S laboratory, has studied the relation between the early development of chlorophyll and of the photosynethetic power. He finds that seedlings developing in darkness and later transferred to light, or developing from the first in light, are able to fix all CO_2 produced by respiration only after becoming almost fully green. When considerable photosynthetic power does appear, it develops rapidly. The author believes the photosynthetic activity up to this stage never fixes more than 10 per cent of the CO_2 produced by respiration, and never amounts to over 1 per cent of the activity after the full development of the chlorophyll. The following quotation from the summary shows the significance of the work: "We are forced to conclude that the first development of this function is not in any relation to the amount of chlorophyll produced, and that the amount of chlorophyll present is never a limiting factor to assimilation in these early stages of the assimilating organs. If this is so, then it must be some other component part of the photosynthetic machinery which controls the beginning of complete functional activity. This part is not developed by illumination so quickly as the green pigment is developed, and therefore the pigment, and other parts of the total machinery, lie idle at the stage we have examined, awaiting the developing of the last factor."—WILLIAM CROCKER.

Reduction divisions of Oenothera.—DAVIS[26] has published another confirmation of the earlier work of GATES[27] and of GEERTS[28] on reduction in

[24] JEFFREY, E. C., A new *Prepinus* from Martha's Vineyard. Proc. Boston Soc. Nat. Hist. **34**:333–338. *pl. 33.* 1910.

[25] IRVING, A. A., The beginning of photosynthesis and the development of chlorophyll. Annals of Botany **24**:805–818. 1910.

[26] DAVIS, B. M., The reduction divisions of *Oenothera biennis*. Annals of Botany **24**:631–651. *pls. 52, 53.* 1910.

[27] GATES, R. R., Pollen development in hybrids of *Oenothera lata*×*O. Lamarckiana*, and its relation to mutation. BOT. GAZETTE **43**:81–115. *pls. 2–4.* 1907.

———, A study of reduction in *Oenothera rubrinervis*. BOT. GAZETTE **46**:1–34. *pls. 1–3.* 1908.

———, The behavior of the chromosomes in *Oenothera lata*×*O. gigas*. BOT. GAZETTE **48**:179–199. *pls. 12–14.* 1909.

[28] GEERTS, J. M., Beiträge zur Kenntnis der Cytologie und der partiellen Sterilität von *Oenothera Lamarckiana*. Recueil Trav. Bot. Néerl. **5**:93–208. 1909.

Oenothera. He gives the telosynaptic account, involving the segmentation of the thick spirem (pachynema) into a single chain of chromosomes. No new facts regarding reduction are brought out, and there are no deviations from the history of reduction as already known for *O. Lamarckiana* and its mutants. The reviewer, in a paper before the Botanical Society of America in 1908,[29] showed that the process of reduction in the mutating forms can be duplicated by figures of every stage in *O. biennis* and *O. laevifolia*, there being the same tendency not to form close pairs, and the same loose arrangement of the chromosomes on the heterotypic spindle. This permits of occasional irregularities in the distribution of the chromosomes during reduction, and these were found to occur in normal material of *O. biennis*, as in the mutating forms. Thus no differences in the method of reduction in the different species and races of *Oenothera* have yet been found, except in *O. grandiflora*, in which DAVIS[30] obtains what he thinks are rings, in the place of loose heterotypic bivalents. As the reviewer has already pointed out,[31] the supposed rings are probably due to a greater attraction between homologous chromosomes in *O. grandiflora* than in the other forms.—R. R. GATES.

Florida peat deposits.—This report[32] is the result of a general survey of peat formations and distribution in Florida, without detailed examination or studies. Immature topography affords the most favorable surface water conditions for deposit of peat if associated with proper climate, not too dry nor too cold, as in glaciated areas of eastern North America and of Europe, and in the Coastal Plain of the southeastern United States. Florida seems to offer ideal conditions, having a greater variety of swamps, bogs, marshes, and places where peat accumulates than any equal area in North America, and also an ample rainfall. A tentative classification of the peat is based on the nature of the water with which it was found associated: salty, muddy, calcareous, swamp waters, with several exceptional deposits. The best and deepest peat is that in the peat prairies classed as "filled lakes"; under the same division is included the northern everglades. Analyses of 53 samples indicate a good average quality, the fuel value being above the average for pressed peat (8500 B.T.U.; DAVIS) for two-thirds of the samples. The list of peat plants includes 83 families of angiosperms, 6 conifers, *Isoetes*, 2 lycopodiums, *Azolla* sp., 11 ferns, several mosses, and *Chara*.—LAURA GANO.

Sporangia of Weichselia.—This is a cretaceous genus of fernlike plants known heretofore only from the bipinnate sterile fronds. The question has

[29] GATES, R. R., Further studies of oenotheran cytology. Science N.S. **29**:269. 1909.

[30] DAVIS, B. M., Pollen development of *Oenothera grandiflora*. Annals of Botany **23**:551–571. *pls. 41, 42*. 1909.

[31] BOT. GAZETTE **49**:64–66. 1910.

[32] HARPER, ROLAND M., Preliminary report on the peat deposits of Florida. Included in third Ann. Rep. Fla. State Geol. Survey. 1910.